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An Analysis of Screen Time Usage and its Impact on Cognitive and Emotional Effects in Adolescents

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Abstract: The present paper discusses the effect of the use of screen time on cognitive and emotional results in adolescents with the sample size of 125 respondents. The study is intended to comprehend the effects of demographic and cognitive abilities on emotional well-being under the condition of growing digital exposure. The structured questionnaire was used to gather data and was analyzed in terms of descriptive statistics, Pearson correlation, and multiple regression. The results show that cognitive skill is positively related to emotional outcomes in a significant way meaning that, the greater the cognitive engagement, the greater the emotional well-being. In contrast, demographic variables such as age and gender do not show a significant influence on emotional outcomes. The regression analysis also proves that cognitive skill is the most significant predictor, and explains moderate percentage of variance in levels of emotions. The paper points out the influence of the screen time is more about quality and the purpose than the time. Positive and constructive screen use can be used to boost cognitive development and consequently, emotional well being in adolescents. The results highlight the necessity of a moderate and attentive attitude towards screen time, as well as the proper parental and educational guidance. The research is an addition to the existing literature on digital behavior and development and provides practical implication on how to encourage healthy screen-based behaviors.

Keywords: more addiction, exposure, overstimulation.

Introduction:

In the current scenario, digital technology has undergone unprecedented expansion that has reshaped the daily lives, routines and developmental



experiences of adolescents across the globe. The shift to technology adaptation has been driven primarily by the widespread availability of smartphones, tablets, laptops, high-speed internet and social networking platforms, video based entertainment and online gaming ecosystems. The digital screens have moved beyond being optional tools for communication or occasional entertainment. They now serve as multifunctional spaces where adolescents learn, socialise, express their identity and navigate their personal and academic challenges. Focusing on adolescents is essential because this developmental stage represents a unique intersection of biological, psychological and social transformations. During adolescents dopamine systems undergo significant reconfiguration, making young individuals more sensitive to reward-based experiences in social media like gaming achievements or viral content.

The rising dependency on screens presents a paradox while technology provides unprecedented opportunities for learning, creativity and global connection that simultaneously exposes adolescents to oversimulation, distraction, emotional volatility and potential behavioural dysregulation. Thus, the complexity underscores the urgent need for scholarly analysis that critically examines the cognitive and emotional impacts of screen time on adolescent populations. The neurobiological tendencies of the adolescents interact powerfully with the design of digital platforms, many of which are engineered to maximise engagement through continuous notifications, infinite scrolling, personalised feed algorithms and emotionally charged content. This might create an environment where adolescents may become excessively dependent on digital gratification, potentially compromising their cognitive stability and emotional self-regulation. Their desire for peer acceptance, validation and belonging often leads them to spend extended time on social media platforms where social comparison, curated perfection and popularity metrics shape self-esteem.

One of the most widely documented concerns involves attention. Digital environments—particularly social media feeds, video streaming platforms, and fast-paced gaming experiences—often present rapidly shifting stimuli that train the brain to seek novelty rather than sustain prolonged focus. As a result, adolescents accustomed to frequent digital stimulation may struggle with concentration, sustained attention, and task persistence in both academic and real-world settings. Multitasking, a common behaviour among digitally active adolescents, further burdens working memory by forcing constant cognitive switching between unrelated tasks such as texting while studying, toggling between entertainment and school assignments, or dividing attention among multiple open apps. Over time, habitual multitasking can hinder deep learning, reduce comprehension, and weaken long-term information retention. High screen exposure also affects executive functioning, including logical reasoning,



emotional inhibition, planning, and goal-oriented behaviour, which are essential for academic success and responsible decision-making.

Emotionally, digital exposure can shape mood stability, self-esteem, emotional resilience, and interpersonal sensitivity. Social media platforms, in particular, expose adolescents to curated images of success, beauty, popularity, and achievement that often lead to unfavorable social comparison. Such comparisons can erode self-worth, heighten insecurity, and trigger feelings of inadequacy. In many cases, adolescents develop a sense of identity that is highly dependent on online validation, such as likes, shares, comments, or follower counts.

Additionally, exposure to cyberbullying, harassment, or exclusion contributes significantly to emotional distress, anxiety, and depressive symptoms. Adolescents also experience emotional dysregulation when engaging with addictive digital platforms that provide rapid but fleeting emotional rewards. The compulsive nature of these platforms, engineered through reward loops and variable reinforcement schedules, can lead to increased irritability, frustration, and emotional dependency when access is restricted.

Behavioral impacts include reduced face-to-face communication skills, social withdrawal, decreased physical activity, and an increased likelihood of risk-taking behaviors influenced by online trends or peer groups. Furthermore, screen-induced sleep deprivation negatively affects mood stability, emotional control, and stress resilience. However, it is important to acknowledge that digital platforms may also provide emotional benefits, such as peer support communities, mental-health information, creative outlets, and communication opportunities for socially isolated adolescents. This dual nature of digital influence highlights the complexity of understanding emotional outcomes and underscores the necessity for balanced interpretations rather than one-sided conclusions.

Objectives :

- To investigate how usage of screen time affects the cognitive development of teenagers.
- To examine the correlation between cognitive ability and emotional performance among teenagers.
- To determine the effects of demographic variables like age and gender on emotional well-being of adolescents.



Review of Literature :

Jason M. Nagata et al. (2024) used the data of the ABCD study in a longitudinal study to explore how screen time is linked to adolescent mental health. The results indicated that more screen time had more behavioral problems and emotional difficulties in the long run. The paper has highlighted that the long-term effect of digital devices on the psychological well-being is negative especially when the habit of using the devices is excessive and unmonitored.

Benjamin Zablotzky et al. (2025) examined the relationship between screen time, and health outcomes among adolescents. The researchers discovered that increased non-academic screen time had a significant positive relationship with depression, anxiety, inadequate sleep patterns, and lack of social support. It found that screen time use may have a negative influence on emotional and behavioral health in adolescents.

Jasmina Wallace et al. (2023) investigated how screen time is associated with cognitive functioning in adolescents. The results showed that higher screen time corresponded to impulsivity and the increase in ADHD-related symptoms, indicating that screen time adversely affects attention and cognitive control. The paper illustrates the possible dangers of overuse of screens on neuropsychological growth.

Xinxin Zhu et al. (2023) studied the patterns of screen time during adolescence and the impact of these patterns in the long term. The authors found that a habitual high screen time in adolescence correlates with worse mental health outcomes in adulthood, such as emotional and behavioral problems. The results imply that early screening practices have enduring impact on emotional growth.

The study by **Naisha Kapoor (2025)** investigated the impact of screen time on cognitive functions such as attention and productivity among adolescents. Interestingly, the results revealed that screen time was not significantly related to cognitive performance, meaning that the effects of screen usage might be determined by the nature and purpose of use, but not necessarily the duration of screen use.

Research Methodology

Data

The present study is mainly based on primary data, which is collected from adolescents by distributing the questionnaires. Primary data were used for the present study. For collecting the first-hand information, 125 respondents were chosen on convenience sampling method by issue of questionnaire containing



socio-economic, preference and suggestion. Open-ended and closed-ended questions were included in the questionnaire to get answers of the objectives laid down in the study.

Sampling

The required data for the study have been collected by way of a structured questionnaire on order to know the impact on emotional and cognitive outcomes of adolescents based on screen timing of the total questionnaire. The data collected are taken for the analysis.

Sample Size

In this research work, the sample size is 125

Framework of Analysis

The collected data has been analysed through regression and factor analysis using spss software.

Data Analysis and Interpretation

Correlation Analysis

Correlations					
		age	gender	cognitive	emotional
age	Pearson Correlation	1	-.089	.118	-.012
	Sig. (2-tailed)		.323	.192	.892
	N	125	125	125	125
gender	Pearson Correlation	-.089	1	-.059	.050
	Sig. (2-tailed)	.323		.515	.580
	N	125	125	125	125
cognitive	Pearson Correlation	.118	-.059	1	.508**
	Sig. (2-tailed)	.192	.515		.000
	N	125	125	125	125
emotional	Pearson Correlation	-.012	.050	.508**	1
	Sig. (2-tailed)	.892	.580	.000	
	N	125	125	125	125
**. Correlation is significant at the 0.01 level (2-tailed).					

The Pearson correlation test was used to determine the linear relationship between the age, gender, cognitive skill and emotional outcomes of the respondents. The results reveal that cognitive skill has a moderate positive and statistically significant relationship with emotional outcomes ($r = 0.508$, $p < 0.01$). This means that the emotional outcomes are related to greater levels of cognitive skill, thus giving a suggestion that cognitive ability is a key determinant of emotional response. Conversely, age shows a small and insignificant association with emotional results ($r = -0.012$, $p = 0.892$) that shows that age change does not have a significant impact on emotional levels. Equally, gender has a very weak and insignificant relationship with emotional outcomes ($r = 0.050$, $p = 0.580$), implying that there is no significant difference in the emotional outcomes among the gender categories.

Moreover, inter-correlations of the independent variables (age, gender, and cognitive skill) are weak and statistically insignificant, which means that the issue of multicollinearity is not present. On balance, the results clearly demonstrate that cognitive skill is the only variable which has significant and significant relation with emotional outcomes and age, and gender have no statistically significant relationships.

Multiple Regression Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.518 ^a	.269	.251	.624

a. Predictors: (Constant), cognitive, gender, age

ANOVA						
Model		Sum of Squares	DF	Mean Square	F	Sig.
1	Regression	17.343	3	5.781	14.824	.000b
	Residual	47.185	121	.390		
	Total	64.528	124			

a. Dependent Variable: emotional

b. Predictors: (Constant), cognitive, gender, age

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.364	.290		4.707	.000
	age	-.062	.073	-.067	-.850	.397
	gender	.109	.115	.075	.955	.342
	cognitive	.480	.072	.520	6.637	.000

a. Dependent Variable: emotional

The multiple regression analysis was done to determine the impact of age, gender and cognitive skill on the emotional outcomes. According to the model summary, the correlation coefficient (R) is 0.518, which means that there is a moderate degree of relationship between the independent variables and emotion. The coefficient of determination (R^2) is 0.269 indicating that 26.9 percent of emotional outcome variations are attributed to the combination of age, gender and cognitive skill. The adjusted R^2 of 0.251 supports the fact that the model is still able to explain the number of predictors reasonably after the adjustment.

According to the results of the ANOVA, the regression model is statistically significant, as represented by the F-value of 14.824 with the level of significance of 0.000 ($p < 0.05$). This illustrates that the independent variables, in combination, have a major influence on emotional outcomes. In terms of individual predictors, cognitive skill exhibits a strong and significantly positive effect on emotion (0.520, 6.637, 0.000). This implies that a rise in cognitive ability results in an appreciable enhancement in emotional performance.

Conversely, age is not a major determinant of emotion (0.067, 0.397), which implies that the age difference does not have a substantial impact on the level of emotion in this research. On the same note, gender too does not indicate statistically significant influence on emotion (0.075, $p = 0.342$) which implies that there are no significant differences in emotional outcomes among different gender categories.

Findings :

The Pearson correlation analysis revealed that:

- There is a moderate positive and statistically significant relationship between cognitive skill and emotional outcomes ($r = 0.508$, $p < 0.01$). This indicates that individuals with higher cognitive skills tend to exhibit better emotional outcomes.



- The overall model is statistically significant ($F = 14.824$, $p < 0.05$), confirming that the independent variables collectively influence emotional outcomes.

Suggestions

The balance in screen time should be promoted to adolescents through reducing screen time and investing in quality digital behavior such as learning and skill-based activities. Monitoring and guidance of usage by parents are needed to control usage and encourage value content. Schools ought to educate the community regarding digital well-being and promote engagement in physical and social activities to promote emotional well-being. Also, it is possible to develop time management skills and apply some simple screen-time rules to make adolescents have a healthy balance between real-life and digital activity.

Conclusion

The study concludes that cognitive skill plays a important positive role in emotional outcomes among adolescents but age and gender fail to play a significant role. The results show that the quality of screen time is more influential than the quantity of the time spent on the screen. Cognitively stimulating and productive screen time can lead to better emotional health, but unmanaged screen time may not produce any beneficial effects. Comprehensively, moderation and conscious attitude towards screen-time are key to fostering healthy cognitive and emotional growth.

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